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POENVFPO S3650 5200KV

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1. INTRODUCTION

This manual provides detailed instructions for the installation, operation, programming, and maintenance of your POENVFPO RC S3650 5200KV Brushless Motor 60A ESC Set. This high-performance system is designed for 1/10 scale remote control cars, offering efficient power delivery and precise control. Please read this manual thoroughly before use to ensure proper function and safety.

2. SAFETY PRECAUTIONS

- Always disconnect the battery from the ESC when not in use to prevent accidental operation.
- Ensure all connections are secure and properly insulated to avoid short circuits.
- Operate RC vehicles in open areas, away from people, pets, and obstacles.
- Avoid contact with rotating parts of the motor during operation.
- Do not expose the ESC or motor to water unless explicitly stated as waterproof. This ESC is waterproof, but ensure all connections are dry before use.
- Use only compatible batteries and chargers. Incorrect voltage or current can damage the components.
- Keep out of reach of children. Adult supervision is recommended during operation.

3. PACKAGE CONTENTS

Verify that all items listed below are included in your package:

- 1 x S3650 5200KV Brushless Motor
- 1 x 60A Electronic Speed Controller (ESC)
- 1 x Motor Heat Sink with Fan
- 1 x Programming Card
- 1 x Instruction Manual (this document)

4. PRODUCT OVERVIEW

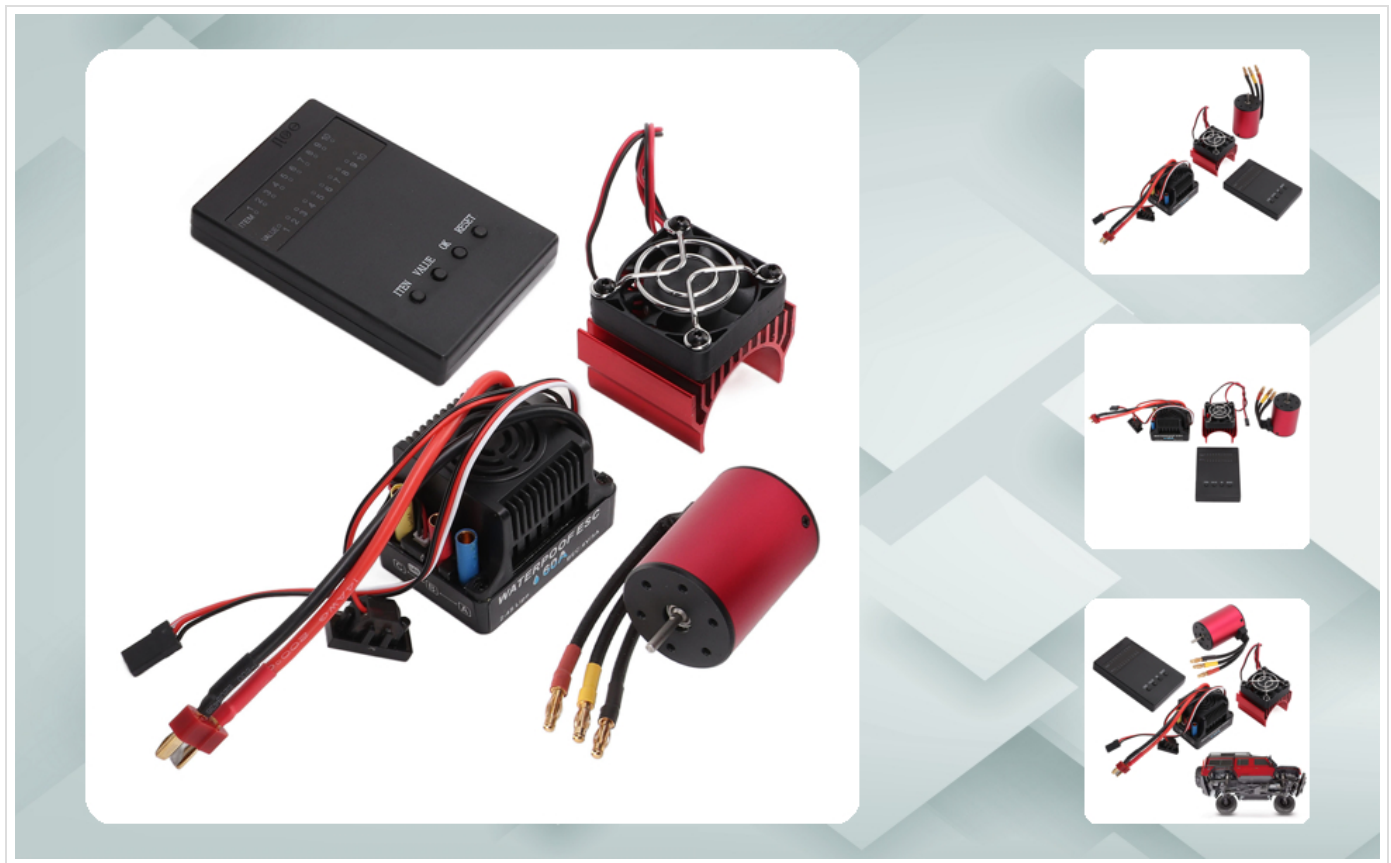


Figure 4.1: The complete POENVFPO RC S3650 5200KV Brushless Motor 60A ESC Set, including the S3650 brushless motor, 60A Electronic Speed Controller (ESC), motor heat sink, and programming card.



4 pole 12 slot high torque motor design
6061 T6 aluminum motor shell processed by CNC ensures the good heat dissipation performance.

Figure 4.2: The 60A Waterproof Electronic Speed Controller (ESC) features a 4-pole, 12-slot high torque motor design and a 6061 T6 aluminum motor shell for efficient heat dissipation. It is compatible with 2-4S LiPo batteries and provides a 6V/5A BEC output.



Figure 4.3: The S3650 5200KV Brushless Motor, shown here, has a diameter of approximately 36mm (1.4in) and a length of 50mm (2.0in) excluding the shaft. The shaft length is 15mm (0.6in) with a diameter of 3.175mm (0.1in). It features 4.0mm golden banana plug connectors.



Figure 4.4: This image shows the red aluminum alloy motor heat sink with an integrated fan. The fan size is approximately 40x40x10mm (1.6x1.6x0.4in) and operates at 6-8V, designed to effectively dissipate heat and prolong motor life.

ITEM	VALUE											
	1	2	3	4	5	6	7	8	9	10	11	12
1: Operation model	Positive rotation brake brake	Direct positive and negative Inversion	Positive belt proportional brake	Positive and Reverse belt Proportional brake								
2: Motor Rotation Direction	Positive rotation	Reversal										
3: Start mode	1 level	2 level	3 level	4 level	5 level	6 level	7 level	8 level	9 level	10 level		
4: Minimum Forward Strength	5%	7%	9%	12%	14%	16%	18%	20%	22%	25%		
5: Minimum backing strength	5%	7%	9%	12%	14%	16%	18%	20%	22%	25%		
6: Maximum Backing Strength	23%	32%	40%	46%	56%	66%	75%	83%	92%	100%		
7: Initial braking strength	0%	5%	11%	18%	22%	27%	33%	38%	44%	50%		
8: Maximum braking strength	0%	11%	22%	33%	44%	55%	66%	77%	88%	100%		
9: Braking force	0%	11%	22%	33%	44%	55%	66%	77%	88%	100%		
10: Neutral point range	2%	2.3%	2.6%	3.0%	3.5%	3.6%	4.0%	4.3%	3.6%	5%		
11: Brake frequency	16KHz	8KHz	4KHz	2KHz	1KHz	500Hz	250Hz	125Hz				
12: lithium saving	Adjust to 100%	2S	3S	4S	5S	6S						
13: Low Voltage Protection Threshold	2.6V	2.7V	2.8V	2.9V	3.0V	3.1V	3.2V	3.3V	3.4V	3.5V	3.6V	3.7V
14: Low Voltage Protection	No protection	Protect										
15: Reverse maximum throttle stroke	0.9ms	0.933ms	0.967ms	1ms	1.033ms	1.067ms	1.1ms	1.133ms	1.167ms	1.2ms		
16: Forward maximum throttle stroke	1.8ms	1.833ms	1.867ms	1.9ms	1.933ms	1.967ms	2.0ms	2.033ms	2.067ms	2.1ms		
17: Synchronized rectification	Close	Open										

Figure 4.5: The included programming card allows for fine-tuning of ESC parameters such as low voltage cut-off, start-up method, maximum braking force, maximum reverse force, and neutral range. This enables customization for optimal performance.

5. SPECIFICATIONS

5.1 Motor Parameters

Parameter	Value
Material	Aluminum Alloy + Copper
Color	Red + Black
Diameter	Approx. 36mm / 1.4in
Length (excluding shaft)	Approx. 50mm / 2.0in

Parameter	Value
Shaft Length	Approx. 15mm / 0.6in
Shaft Diameter	Approx. 3.175mm / 0.1in
KV Value	5200KV
Maximum Speed	60000 RPM
Maximum Voltage	8.4V
Maximum Current	100A
Connector	4.0mm Golden Banana Plug

5.2 ESC Parameters

Parameter	Value
Shell Material	Plastic
Color	Black
Continuous Current	60A
Peak Current	320A
Applicable Voltage	7-15V (2-4S LiPo)
BEC Output	6V/5A

5.3 Heat Sink Parameters

Parameter	Value
Material	Aluminum Alloy + Plastic
Color	Red
Working Voltage	6-8V
Fan Size	Approx. 40x40x10mm / 1.6x1.6x0.4in

5.4 Programming Card Parameters

Parameter	Options/Values
Color	Black
Material	Plastic
Low Voltage Cut Off	3.7V / 3.6V / 3.5V / 3.4V / 3.3V / 3.2V / 3.1V / 3.0V / 2.9V / 2.8V / 2.7V / 2.6V
Start Up Method	Medium, Weak, Strong
Maximum Braking Force (for 60A ESC)	25%, 50%, 75%, 100%

Parameter	Options/Values
Maximum Reverse Force	25%, 50%, 75%, 100%
Neutral Range	6%, 9%, 12%

6. SETUP INSTRUCTIONS

6.1 Mounting the Motor

1. Ensure your RC car chassis is compatible with a 36mm diameter motor.
2. Securely mount the S3650 motor to the motor mount using appropriate screws. Ensure the motor is firmly attached to prevent movement during operation.

6.2 Connecting the Motor to ESC

1. Connect the three 4.0mm golden banana plugs from the motor to the corresponding output wires on the ESC.
2. The connection order (A, B, C) typically does not matter for brushless motors, but if the motor spins in the wrong direction, swap any two of the three wires.

6.3 Connecting the ESC to Receiver

1. Plug the small signal cable from the ESC (usually black, red, white/orange) into the throttle channel (CH2) of your RC receiver.
2. Ensure the polarity is correct (signal, positive, negative).

6.4 Connecting the Battery

1. Connect your 2-4S LiPo battery to the main power input connector of the ESC.
2. Always ensure the battery is fully charged and properly connected before operating the vehicle.

6.5 Installing the Heat Sink

1. Carefully place the aluminum heat sink around the motor.
2. Ensure the fan is positioned to draw air across the motor for optimal cooling.
3. Connect the heat sink fan's power lead to an available 6-8V power source on your receiver or directly to the BEC output if an auxiliary port is available.

7. OPERATING INSTRUCTIONS

7.1 Initial ESC Calibration (Recommended)

For optimal performance, it is recommended to calibrate the ESC with your radio transmitter. Refer to your radio system's manual for specific calibration procedures. Generally, this involves:

1. Turn on your transmitter and ensure throttle trim is at neutral.
2. Connect the battery to the ESC while holding the ESC's set button (if available, otherwise follow specific ESC instructions).
3. Follow the LED/beep sequence to set full throttle, full brake, and neutral positions.

7.2 Powering On/Off

- **To Power On:** Ensure the transmitter is on first, then connect the battery to the ESC. The ESC will emit a series of tones and the motor may twitch, indicating it's ready.

- **To Power Off:** Disconnect the battery from the ESC first, then turn off your transmitter.

7.3 Basic Control

- **Throttle:** Push the throttle stick forward to accelerate, pull back to brake.
- **Reverse:** After braking to a stop, pull the throttle stick back again to engage reverse.
- **Steering:** Use the steering wheel/stick on your transmitter to control the direction of the vehicle.

8. PROGRAMMING CARD USAGE

The programming card allows you to adjust various parameters of the ESC to fine-tune its performance according to your preferences and driving conditions.

8.1 Connecting the Programming Card

1. Disconnect the ESC's signal cable from the receiver.
2. Plug the ESC's signal cable into the designated port on the programming card.
3. Connect the battery to the ESC. The programming card will power on and display the current settings.

8.2 Adjusting Parameters

Use the buttons on the programming card to navigate through the parameters and select desired values. Refer to the Programming Card Parameters table in Section 5.4 for available options.

- **ITEM:** Press this button to cycle through the programmable parameters.
- **VALUE:** Press this button to change the value of the currently selected parameter.
- **OK:** Press this button to confirm and save the selected value for the current parameter.
- **RESET:** Press this button to restore all parameters to their factory default settings.

After making all desired changes, disconnect the battery from the ESC, then remove the programming card. Reconnect the ESC signal cable to your receiver before operating the vehicle.

9. MAINTENANCE

- **Cleaning:** Regularly clean the motor and ESC to remove dirt, dust, and debris. Use a soft brush or compressed air. Ensure the heat sink fins are clear for effective cooling.
- **Inspection:** Periodically inspect all wires and connectors for signs of wear, damage, or loose connections. Check the motor shaft for any obstructions or damage.
- **Storage:** Store the motor and ESC in a dry, cool place away from direct sunlight and moisture when not in use.

10. TROUBLESHOOTING

Problem	Possible Cause	Solution
Motor not spinning / No power	Battery not connected or discharged; Loose connections; ESC not calibrated; Faulty component.	Check battery charge and connection; Secure all wires; Perform ESC calibration; Inspect components for damage.
Motor spins in wrong direction	Incorrect motor wire connection.	Swap any two of the three motor-to-ESC wires.

Problem	Possible Cause	Solution
ESC overheats	Overgearing; Insufficient cooling; Excessive load.	Check gearing; Ensure heat sink fan is working and clear; Reduce load or run time.
Loss of control / Glitching	Radio interference; Low receiver battery; Loose receiver connection.	Check radio system; Ensure receiver has adequate power; Secure receiver connections.
Motor stutters or cogging	Loose motor wires; Sensor wire issue (if applicable); ESC timing setting.	Check motor wire connections; Adjust ESC timing via programming card.

11. WARRANTY AND SUPPORT

This product is covered by a standard manufacturer's warranty against defects in materials and workmanship. For specific warranty terms, duration, and to obtain technical support or service, please contact the retailer or manufacturer directly. Keep your purchase receipt as proof of purchase.

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